

Abstract of the Disclosure

This invention provides a means of detecting unlabeled DNA or RNA following hybridization to an immobilized, labeled DNA probe. The immobilized DNA oligomers (probes) form a hairpin structure containing a unique restriction site that persists only when hybridization to the internal target-hybridization sequence has not occurred. Restriction enzyme digestion of unhybridized, labeled DNA probes at or above room temperature detaches the label from the surface and the label is washed away. The hairpin structure is disrupted when hybridization of the internal target-hybridization sequence occurs, removing the restriction site and preventing cleavage. In this case, the labels on target-hybridized probes remain bound to the substrate and are detected. In its preferred embodiment, a bioluminescent label is located on one end of the probe and a surface attachment moiety is on the other. Applications include characterization of mutations and single nucleotide polymorphisms in DNA and RNA, genomic fingerprinting, analysis of DNA or RNA sequence for medical diagnostics, and pathogen detection and identification.